

WHAT IS CLAIMED IS:

1. An image forming apparatus comprising:

a detachable first process cartridge for forming a  
5 first color toner image on a recording medium;

a detachable second process cartridge for forming a  
second color toner image on the recording medium after the  
formation of the first color toner image on the recording  
medium;

10 first detection means for detecting an amount of toner  
used by the first process cartridge during color image  
formation; and

determination means for estimating an amount of first  
color toner mixed into the second process cartridge based  
15 on the amount of toner detected by the detection means and  
determining when it is time to replace the second process  
cartridge based on the estimated amount of first color toner  
mixed into the second process cartridge.

20 2. The image forming apparatus of claim 1, further  
comprising a second detection means for detecting an amount  
of toner causing deterioration inside the second process  
cartridge,

wherein the determination means determines that it  
25 is time to replace the second process cartridge whenever  
a defective toner amount exceeds a predetermined value,  
the defective toner amount being the sum of the amount

of first color toner mixed into the second process cartridge based and the amount of toner causing deterioration inside the second process cartridge.

5           3. The image forming apparatus according to claim 2, wherein:

          the second process cartridge has a memory for storing one or more parameters relating to the defective toner amount; and

10           the determination means has means for storing the one or more parameters relating to the defective toner amount in the second process cartridge memory,

          wherein the determination means reads out the one or more parameters relating to the defective toner amount from  
15   the second process cartridge memory to obtain the defective toner amount.

          4. The image forming apparatus according to claim 2, wherein the second detection means for detecting the  
20   amount of toner causing deterioration inside the second process cartridge detects such toner amount based on utilization of the second process cartridge.

          5. The image forming apparatus according to claim  
25   2, wherein the second detection means for detecting the amount of toner causing deterioration inside the second process cartridge detects such toner amount from a rotation

speed and length of time of rotation of a development roller included in the second process cartridge.

6. The image forming apparatus according to claim 1, wherein the first detection means determines the amount of toner used by the first process cartridge during color image formation from an amount of image data in the image formed by the first process cartridge.

7. A control method for controlling an image forming apparatus having a detachable first process cartridge for forming a first color toner image on a recording medium and a detachable second process cartridge for forming a second color toner image on the recording medium after the formation of the first color toner image on the recording medium, the control method comprising:

a detection step of detecting an amount of toner used by the first process cartridge during color image formation; and

a determining step of estimating an amount of first color toner mixed into the second process cartridge based on the amount of toner detected in the detection step and determining that it is time to replace the second process cartridge based on the estimated amount of first color toner mixed into the second process cartridge.

8. A cartridge that can be detachably attached to

a color image forming apparatus that forms an image using a plurality of color toners, the cartridge comprising:

a toner container for holding toner; and

a storage unit for storing information relating to  
5 an amount of unusual toner included in said toner container.

9. The cartridge according to claim 8, wherein the unusual toner includes off-color toner in the toner container and/or degraded toner in the toner container.  
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10. The cartridge according to claim 8, wherein the amount of unusual toner is the sum of the amount of off-color toner included in the toner container and an amount of degraded toner included in said toner container.  
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11. The cartridge according to claim 8, wherein the storage unit further comprises a storage area for storing a table that correlates a print data amount of said image forming apparatus and the unusual toner amount included in  
20 the toner container of the image forming apparatus.

12. The cartridge according to claim 8, further comprising a developer member for developing the toner in said toner container onto an image carrier of the image  
25 forming apparatus.

13. A memory device loaded into a cartridge used in

an image forming apparatus that uses a plurality of color toners to form an image, the image forming apparatus including an image carrier, a toner container holding toner, and a developer member for developing the toner in the toner container onto the image carrier, memory device comprising a storage area for storing information related to an amount of unusual toner in the toner container.

14. The memory device according to claim 13, wherein the unusual toner includes off-color toner in the toner container and/or degraded toner in the toner container.

15. The memory device according to claim 13, wherein the unusual toner amount is the sum of the off-color toner amount in the toner container and an amount of toner of a color different from the color of the toner in said toner container.

16. The memory device according to claim 13, further comprising a storage area for storing a table that correlates a print data amount of said image forming apparatus and the unusual toner amount included in the toner container of the image forming apparatus.

17. The memory device according to claim 13, wherein the cartridge includes at least said toner container.